

> Adaptation strategies in climate policy

acatech POSITION PAPER – SUMMARY AND RECOMMENDATIONS



An effective climate policy comprises both curbing climate change by reducing CO₂ emissions (mitigation) and adapting to its impact (adaptation). Mitigation and adaption are complementary and not competitive policies. Consequently, whilst continuing to pursue global emissions reduction targets, Germany should also start adapting to and preparing for climate change.

While there is no doubt that climate change is here to stay, it has so far occurred at a gradual pace. Based on what we currently know, it should be possible to control its effects in Germany over the coming decades. Germany is not expected to experience climatic boundary conditions that do not already exist in other parts of the world where they are, as a rule, being managed successfully. Germany has a duty to meet its global responsibilities by providing those countries and regions with our technological know-how which are hit hardest by the global effects of climate change.

The impacts of climate change

The areas that will need to adapt the most will be the natural environment and the associated infrastructure and economic sectors, as well as urban development. Germany's **natural resources** will not escape the consequences of a changing climate. Some of the more obvious effects will include soil erosion in upland regions and the Alps, increased risk of forest fires, changes in the species found throughout Germany and new diseases affecting trees, crops and livestock which could result in major fluctuations in agricultural output. Consequently, forest protection, soil conservation and flood control measures must form part of any adaptation strategy. New climate-adapted tree and plant species will also play a major role.

Extreme weather conditions can have an impact on **urban development and infrastructure**. Hail, high winds and unusually hot weather can damage buildings and other structures, whilst heavy rainfall can place a strain on the sewerage system. Although warmer summers will mean higher air conditioning costs as temperatures rise inside buildings and in city centres, heating costs during the winter months can be expected to fall. Towns in coastal areas will need to adjust to rising sea levels.

The impact of climate change is felt across the entire value chain in the **energy** sector. High winds and heavy rainfall can threaten the safety of free-standing generating units, while high temperatures diminish the availability of cooling water.

The negative impacts on transport infrastructure and **mobility**, on the other hand, are likely to be relatively limited. High temperatures may damage road surfaces and structures such as bridges may be damaged by high winds.

Heat stress can be harmful to the **health** of young children, the elderly and the infirm. Moreover, a warmer climate means that pollen counts will remain higher for longer, causing a rise in allergies. Warmer weather also allows pathogens to spread more easily.

There may be major regional differences in the impacts of climate change and hence the measures required to adapt to it. While climate change will cause crop yields to increase in some regions, they will inevitably fall in other regions even if the appropriate adaptation measures are implemented.

International cooperation should be encouraged in areas where adaptation initiatives affect more than one country or where it is possible to disseminate adaptation knowhow internationally.

Challenges at the regional and global level

Following the failure of a succession of global climate conferences to agree effective measures to curb emissions, the German government addressed the issue of adaptation through its 2008 German Adaptation Strategy (Deutsche Anpassungsstrategie – DAS) and an Adaptation Action Plan (Aktionsplan Anpassung – APA) that was adopted in 2011. Moves are also afoot to draft a European adaptation strategy by 2013.

The majority of the adaptation measures will in particular affect local and regional government and they therefore need to be put in a position where they are able to respond appropriately to the relevant challenges. Projections regarding the specific extent of climate change in different regions are plagued by uncertainty. Government therefore has a particular responsibility to compile information about concrete climate effects and interactions. This information will enable the private sector to determine the available options and improve the effectiveness of its decision-making processes.

Climate change will require adaptation strategies to be adopted in other parts of the world, too. In Germany, this should be a trigger for the development of new technologies and innovation that can help countries all over the world to adapt. Germany has an international responsibility to meet the new global challenges and to actively foster a climate policy that builds on mitigation and adaptation measures appropriately.

acatech RECOMMENDATIONS

acatech recommends that:

> Natural resources

1. Climate and adaptation research should be enhanced
2. Adaptation strategies should be developed for sustainable agriculture and forestry
3. Monitoring of changing systems should be introduced
4. Public information should be enhanced

> Urban development, infrastructure and coastal management

5. Best practices for climate-conscious urban development should be established
6. Planning instruments and regulations should be reviewed
7. Socially acceptable “no regrets measures” should be developed, for example in the housing sector
8. University and vocational education should be adapted

> Energy

9. Current investments should be used for adaptation
10. Research into regional climate change should be enhanced
11. Regional differences and potential distribution conflicts should be taken into account
12. Adaptation issues should be incorporated into energy policy regulation

> Mobility

- 13. Risk management procedures should be established for key freight and passenger transport routes
- 14. The relevant technical modifications should be made in the rail transport sector
- 15. Drains and sewers in the road infrastructure should be adapted

> Health

- 16. Medical research should be adapted
- 17. Technological and architectural developments to combat heat stress should be promoted

> International aspects

- 18. An international information exchange on the cross-border effects of climate change should be established
- 19. Development assistance should be geared towards adaptation

At a glance

- Germany needs to prepare for climate change. An effective climate policy should incorporate both strategies for curbing climate change by cutting emissions and strategies for adapting to the consequences of climate change.
- It should largely be possible to manage the impact of climate change in Germany over the coming decades. Nevertheless, it will be important to take account of the increased risks associated with extreme weather conditions.
- It will be especially necessary for the infrastructure and economic sectors associated with the natural environment to adapt to the consequences of climate change. The bulk of the adaptation strategies will be implemented by regional and local government and they should therefore be put in a position where they are able to respond appropriately to the new challenges.
- Germany has an international responsibility to develop new answers to the challenges of global climate change and to promote a climate policy that actively fosters adaptation strategies as well as emissions reduction.

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